

C. Chlorofluorocarbons

1. Originally, ammonia was used for coolants but were found to have harmful fumes
2. Thomas Midgely synthesized the first CFCs in 1928

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- a. CFC is a substance that consists of chlorine, fluorine, and carbon
- b. CFCs do not occur naturally
- c. CFCs became widely used for refrigerants, solvents, and propellants by 1935

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3. CFCs first found in atmosphere during 1920s
 - a. concentrations of CFCs were at an all-time high by 1990
4. Connection between CFCs and the reduction of O_3 in the atmosphere

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1 The ozone layer is made up of...

- A Nitrogen
- B Helium
- C Oxygen

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2 The neptosphere is a layer in the earth's atmosphere

True
False

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3 What is the normal amount of ozone in the atmosphere?

A 300 Dobson Units
B 200 Dobson Units
C 300 Hobson Units

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4 Chlorofluorocarbons (CFCs) occur naturally

True
False

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5 What would you expect to result from a decrease in the amount of ozone in the stratosphere?

A decrease in the amount of oxygen in the troposphere
B decrease in the number of individual oxygen particles
C increase in the amount of oxygen in the troposphere
D increase in the number of individual oxygen particles

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6 Ozone is found in the ...

- A troposphere
- B stratosphere
- C mesosphere
- D ionosphere

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1.2, I. Matter - the "building blocks" or "stuff" of the Universe

- A. Matter - any thing that has mass and takes up space
- B. Mass - a measurement that reflects the amount of matter

Section 1.2

C. Weight is a measure of the amount of matter and the effect of Earth's gravity on that matter

- 1. slight differences in your weight can exist depending on the gravitational pull at your location (equator vs MT)

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D. Much of matter macroscopic - which means you can see it w/your naked eye

- 1. Matter can be broken down into elements and elements can be broken down into atoms
 - a. atoms are sub-microscopic - which means they cannot be seen with optical microscopes

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2. The structure, composition, and behavior of all matter can be explained on a submicroscopic level, aka the atomic level
- E. Chemistry seeks to explain submicroscopic events that lead to macroscopic observations
1. Models are used to illustrate the ties between submicroscopic events and macroscopic structures

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- a. A model is a visual, verbal, and/or mathematical explanation of data collected from many experiments
- b. Models are used to represent matter
- II Chemistry: The Central Science
- A. Because there are so many types of matter, chemistry is broken down into several branches
1. Name five branches of chemistry

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- a. Biochemistry
b. Environmental Chemistry
c. Industrial "
d. Organic "
e. Inorganic

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Section 1.2 Review

Grade:
Subject:
Date:

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1 Anything that has mass and takes up space is....

- A matter
- B volume
- C pressure
- D weight

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2 Which of the following is composed of matter?

- A the air in a balloon
- B the exhaust from a car
- C juice in a glass
- D all of the above

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3 Why can an object's weight vary with a location but its mass cannot?

- A measurements of mass account for varying gravitational pulls in different locations
- B weight is a measure of the amount of matter in an object, which changes from place to place
- C systems of measurement vary with location
- D weight is a measure of the gravitational pull on matter. Mass measures only the amount of matter.

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4 Chemists whose specialty is determining the composition of chemicals work in the field of...

- A analytical chemistry
- B organic chemistry
- C physical chemistry
- D inorganic chemistry

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5 What branch of chemistry is most concerned with the study of carbon compounds?

- A analytical
- B inorganic
- C organic
- D physical

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6 A systematic approach is an organized method of solving a problem

- True
- False

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1.3, I Scientific Methods

- A. Scientists use scientific methods to systematically pose and test solutions to questions and assess the results of tests
- B. What is a systematic approach?
→ organized approach
- C. The Scientific Method is a systematic approach used in scientific study, helps verify work of other scientists

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D. Observations- the act of gathering info.
→ using your senses

1. Two types of observation info.

- a. Qualitative data- information that describes color, odor, shape, or some other physical characteristics
- b. Quantitative data- numerical info describing how much, how little, how big, how tall, how fast, etc...

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- E. Hypothesis- a tentative, testable statement or prediction about what has been observed
1. A hypothesis needs data to support it
- F. Experiments- a set of controlled observations that test the hypothesis

1. Experiments are performed by manipulating variables
- a. one variable is changed at a time
- b. A variable is a quantity or condition that can have more than one value
2. Independent variables are the variables you plan to change in an experiment

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3. Dependent variables change values in response to the manipulation of the independent variable
4. In experiments it is valuable to have a control, that is the standard for comparison
5. Experiments can generate a lot of data

- a. data is analyzed against the hypothesis so they can make an informed conclusion
- b. a conclusion is a judgment based on the information obtained
- c. A hypothesis can never be proven beyond a doubt

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→ evidence supports a hypothesis
but doesn't make the hypothesis 100% true

G. Theory - an explanation of a natural
phenomena based on many observations
and investigations over time

1. Atomic theory, Einstein's theory of
relativity are examples

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H. Scientific Law - a relationship in
nature that is supported by many
experiments

1. Laws occur when scientists come to
the same conclusion about certain
relationships in nature and
they find no exceptions to
those relationships

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Section 1.3 Review

Grade:

Subject:

Date:

1 The general term for a systematic approach used in
scientific study is...

- A scientific method
- B scientific law
- C qualitative analysis
- D quantitative analysis

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2 Quantitative data is the type of data that is descriptive in nature...

- True
- False

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3 The variable that you plan to change during the course of an experiment is...

- A independent variable
- B dependent variable
- C a constant
- D a control

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4 When an explanation has been supported by many experiments, the explanation is...

- A hypothesis
- B theory
- C law
- D model

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5 A tentative explanation for a series of observations is a...

- A hypothesis
- B theory
- C law
- D model

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6 Which of the following was discovered by chance when fibers were pulled from a mixture of solutions?

- A chlorofluorocarbons
- B nylon
- C ozone
- D silk

7 Two items that must be worn during any laboratory experiment are...

- A safety goggles
- B fire-proof mitts
- C gloves
- D face shield
- E lab apron

Section 1.4

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1.4 Scientific Research

I. Scientific investigations result in the development of technology that can improve our lives and the world around us;

→ What does synthetic mean?
something that is human-made and that does not occur naturally

A. Types of scientific investigations

1. Pure research- research conducted by scientists to gain knowledge for the sake of gaining knowledge
2. Applied research- research undertaken to solve a specific problem

B. Laboratory Procedures

1. In lab you will form hypotheses, test hypotheses, gather data, analyze data, and draw conclusions

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II Data Analysis Lab
→ ozone + Antarctica

III Benefits of Chemistry

A. Chemists help solve many of the problems or issues we face today because everything in the universe is made of matter

8 Research that is conducted for the sake of increasing fundamental knowledge is...

- A technology
- B applied research
- C pure research
- D theoretical research

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9 Research on how solubility affects the digestion of nutritional supplements would be an example of...

- A technology
- B fundamental research
- C applied research
- D theoretical research

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